Misc file through to - Kelly
M/045/017

BARRICK MERCUR GOLD MINE

January 15, 1990

Mr. Donald A. Ostler, P.E.
Director
Bureau of Water Pollution Control
P.O. Box 16690
Salt Lake City, Utah 84116-0690

Dear Mr. Ostler:

Subject: Deep Well (MW-3) at Dump Leach Area 2

Following submission of the drilling program by Barrick on September 1, 1989 and subsequent discussions and approval from your staff, we commenced drilling the deep monitoring well at the Dump Leach Area 2 site. Several technical problems developed during the drilling process. The difficulties are of sufficient concern that we believe meeting with you and your staff to mutually determine appropriate next steps would be productive. It will also provide the opportunity to mutually assess the merits of the current drilling concept of completing a deep monitor hole versus installation of one or two additional shallow monitoring holes.

The drilling program to date on MW-3 has cost $64,000. The problems we have encountered are briefly summarized as follows:

- The borehole at site designation MW-3 was started with the intent of verifying the deep groundwater characteristics in the vicinity of Dump Leach Area 2. Groundwater was not expected above 1,200 feet in depth. The hole was collared into the Great Blue Limestone and grouted into place. At 76 feet, a 14-inch diameter surface casing was set. The Mississippian Upper Great Blue Limestone was encountered in the remainder of the borehole.

- At a depth of 240 feet, it was necessary to convert to drilling with mud. Up until that depth, air-rotary and reverse air drilling methods were used. Drilling continued with several zones of lost circulation encountered to a depth of 835 feet. Up to that point, 448 bags (solid @ 50 lb ea) of drilling additives had been required. The drill string was then extracted following mechanical problems with the mud circulation pump. Plugging of the bit occurred upon tripping back into the borehole, and the jets were removed.

P.O. Box 838, Tooele, Utah 84074 Telephone (801) 268-4447

- From 890 to 925 feet, a relatively clean and competent limestone was drilled. At 925 feet, an argillaceous shale was encountered. A highly fractured zone was intercepted at a depth of 956 feet and persisted to 969 feet. In the interval from 885 to 965 feet, an additional 46 bags of additives were used.

- All circulation was lost at 965 feet. Drilling persisted for 75 feet in an effort to recover circulation and maintain the borehole. In the final 11 feet, an additional 488 bags of additives were used.

- Upon reaching 1,040 feet, the drillers attempted to trip the bit. Upon pulling back the drill string, the stabilizing collars became stuck in swelling shaley materials at approximately 200 feet. The string was reassembled and set on bottom, pending a wash-over of the bridge.

- On December 6, 1989, the wash-over broke through several bridges to approximately the 300 foot depth. At this point, all circulation was lost. The driller made the decision to cease the drilling and attempted to pull the primary string. The bridge cuttings evidently had lodged above the stabilizers, and all efforts to free the primary string were unsuccessful. At that juncture, the drill rig was demobilized. Further efforts pended availability of a larger rig or the decision to abandon the hole.

- Based on discussions between our consultant Dames & Moore and Lang Drilling, the decision has been made to abandon the borehole. A second wash-over attempt holds less chance for success than the first effort. An abandonment protocol has been proposed by the driller. The steps meet with the State of Utah guidelines. This abandonment procedure has been included as Attachment 3.

- It is apparent that the drilling of borehole MW-3 cannot proceed due to extremely difficult subsurface conditions associated with the highly plastic clayey shales and the fracture zones in the limestone. No significant groundwater has been conclusively identified in this borehole from 110 to 1,040 feet.

Based upon the detailed technical information presented in the enclosed attachments, we believe borehole MW-3 should now be abandoned for the following reasons:

1. Two shallow monitoring wells, MW-5 and MW-7, have been successfully completed at the Dump Leach Area 2 site.

The subsurface geologic data collected from monitor wells MW-5 and MW-7 and borehole MW-3 indicate the presence of a shallow perched alluvial aquifer located immediately downgradient from Dump Leach Area 2 (Plate 1). The zone of saturation in the alluvium extends from about 30 feet to 70 feet below ground surface (Attachment 1).

The water quality data collected and reported to date indicate lead to be slightly in excess of the lead concentration limit as per Utah's Primary Drinking Water Quality Standards. However, these concentrations are suspect in that total and dissolved concentrations are reportedly the same. Therefore, we have scheduled resampling of these wells. It is noted that the Primary Standards for sulfate and total dissolved solids are minimally exceeded. Chloride and manganese concentrations are also reported to slightly exceed Utah's Secondary Drinking Water Quality Standards (Attachment 2). Total cyanide was detected only in MW-7 at a concentration of 0.0032 mg/l, just slightly above the detection limit of 0.002 mg/l and well below the recommended human health advisory level of 0.02 mg/l.

2. The presence of significant shale and shaley limestone and the absence of significant water-bearing zones from the base of the shallow aquifer to 1,040 feet (the TD of borehole MW-3) indicate that the potential for adversely impacting the deep regional aquifer, located at a projected depth much greater than 1,040 feet, is very small.

3. Operational solution flow balance and leakage collection system flow characteristics continue to reveal only negligible losses to the subsurface environment. Technical data previously submitted to the Bureau (Dames & Moore, 1989; Sacrison, 1989) also indicate the extremely low probability of a contaminant plume of sufficient size to reach any deep, utilized groundwater.

4. Loading of Dump Leach Area 2 will cease prior to October of 1990. Thereafter, process solution cyanide concentration will rapidly decline until all leaching is curtailed. This would also be a good time to look to the longer life of the new Dump Leach Area 3 and perhaps invest further deep well expenditures into the monitoring of the new dump, in the event that course of action is warranted.

Enclosed for your review is the following information:

Attachment 1

The borehole geologic logs for borehole MW-3 and monitor wells MW-5 and MW-7, and the monitor well completion and water level information for MW-5 and MW-7.

Attachment 2

The laboratory analytical results of the water quality samples from MW-5 and MW-7.

Attachment 3

Abandonment procedures for the deep borehole (MW-3), as proposed by Lang Drilling.

We recognize that this matter should be thoroughly discussed with you and your staff at the earliest possible time in order to arrive at an appropriate agreement on how to proceed. We have been able to schedule a meeting through Jay Pitken of your office on Monday, January 22, 1990. We have arranged for our consultant to join us, and we will be prepared to discuss the matter in detail at that time.

In the event you or your staff wish further information prior to this meeting, I would be pleased to hear from you.

Your continued cooperation is appreciated.

Sincerely,

Frank D. Wicks
Vice President and General Manager

FDW/cg

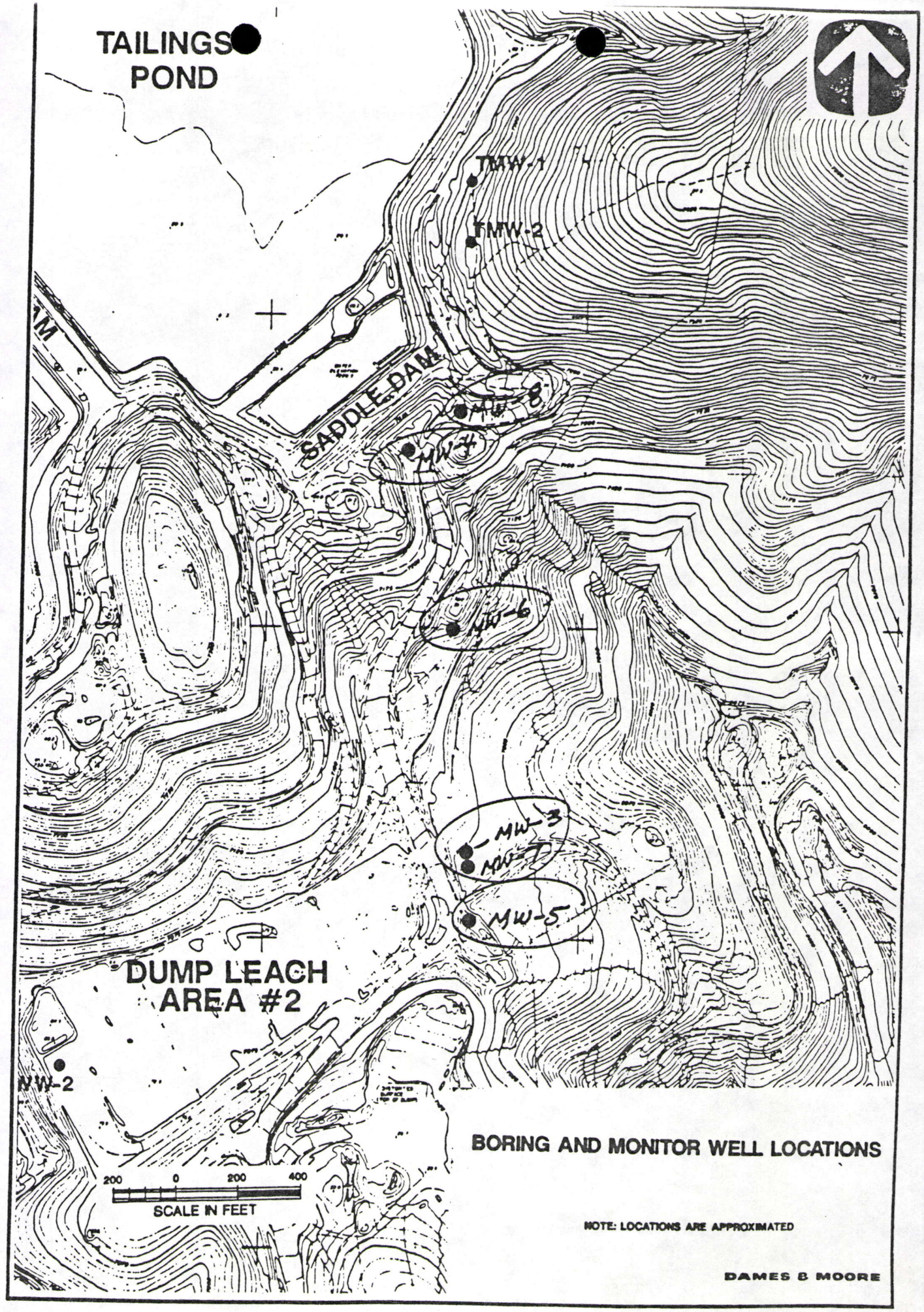
Attachments

cc: D. P. Beatty
G. M. Eurick
T. B. Faddies
C. L. Landa
E. E. Maurer
M. P. Richardson
R. R. Sacrison
D. Bird (Parsons, Behle & Latimer
L. Braxton (DOGM)
S. Matheson (Parsons, Behle & Latimer)
D. Vandell (Dames & Moore)

References Cited

Dames & Moore, September 1989, Seepage and Groundwater Assessment for Dump Leach Area 2, Barrick Mercur Gold Mine, Utah, for Barrick Resources (USA), Inc.

Sacrison, R., February 1989, Hydrologic Performance of the Dump Leach 2 Composite Liner; Response to the December 16, 1988 Letter from D. A. Ostler, Utah BWPC.



BORING AND MONITOR WELL LOCATIONS

NOTE: LOCATIONS ARE APPROXIMATED

DAMES & MOORE

PLATE I

REVISIONS
BY _____ DATE _____

BY _____ DATE _____
CHECKED BY _____

FILE _____

GEOLOGIC LOG: Borehole MW-3

Depths (in feet) from	to	
0	10	Clay, silty, light brown to light pinkish brown.
10	15	Silt, some silty clay, light brown.
15	20	Silt, trace of very fine sand and gravel, light brown.
20	25	Grades with some limestone gravel.
25	30	Silt, some gravel comprised of dark shale, medium brown.
30	35	Grades with some limestone gravel.
35	50	Silt, trace of gravel comprised of shale, medium brown.
50	55	Silt, clayey, some gravel, trace of fine sand, medium brown.
55	64	Silt, trace of very fine sand and gravel, dark gray.
64	67	Limestone, some calcite veining, fractured, very fine grained, dark gray.
67	70	Shale, argillaceous, dark gray to black.
70	75	Limestone and shaley limestone, dark gray to black.
75	85	Shale, dark gray to black.
85	95	Shale, clayey, interbedded with thin-bedded fine grained limestone, dark gray.
95	110	Grades with more clay and medium brown siltstone.
110	115	Limestone, very fine grained, highly fractured, dark gray.
115	185	Grades with heavy calcite veining, moderate to highly fractured.
185	195	Grades shaley, argillaceous.
195	205	Grades with thin-bedded shaley limestone.
205	235	Limestone, shaley, moderately fractured, dark gray.
235	275	Limestone,very fine grained, moderately fractured with occasional shaley interbeds, dark gray.
275	300	Grades without shale.
300	325	Limestone, very fine grained, abundant calcite, moderately fractured, dark gray.
325	335	Shale, interbedded with limestone, dark gray.
335	345	Limestone, very fine grained, hard, highly fractured, dark gray.
345	355	Grades very hard and fractured.
355	360	Circulation loss.
360	375	Limestone, fine grained, very hard, dark gray.
375	395	Shale, argillaceous, very sticky, dark gray.
395	400	Grades with some limestone.
400	425	Limestone, thin-bedded, fine grained, with interbedded shales, dark gray to black.
425	445	Grades without shale, abundant calcite veining.
445	465	Limestone, very fine grained, abundant calcite,some thin interbeds of shale, dark gray.
465	500	Grades with more shale, minor fractures, dark gray.
500	545	Limestone, fine grained, abundant calcite veins, dark gray.
545	555	Grades with some shale.
555	595	Limestone interbedded with shale, abundant calcite, dark gray.
595	615	Shale, calcite veining,hard, dark gray.
615	670	Limestone, minor to moderately fractured, minor calcite growths, very hard, limonite staining.
670	695	Grades extremely fractured without limonite staining.
695	710	Lost circulation, large fracture.
710	745	Limestone, fine grained, highly fractured, dark gray and brown.
745	780	Limestone, fine grained, interbedded with some brown limestone.
780	815	Limestone, fine grained, intermittent fractures, dark gray.
815	830	Grades with some shaley interbeds.
830	840	Limestone, shaley with thin interbedded very fine limestone, dark gray.

GEOLOGIC LOG: Borehole MW-3 (continued)

855	880	Grades with interbeds of dark gray to black argillaceous shale and shaley limestone.
880	890	Limestone, shaley, dark gray with calcite veins, fractured, dark gray.
890	925	Limestone, fine grained, brown to dark gray.
925	940	Limestone, fine grained , dark gray with interbedded light brown clay, minor calcite.
940	956	Grades with increasing amounts of clay.
956	969	Major fracture zone, lost circulation.
969	1040	Lost circulation.

REMARKS: Boring was drilled to 1040 feet below grade, drill steel stuck in hole. Boring was drilled to 240 feet with air rotary methods, mud rotary to 1040 feet below grade.

GEOLOGIC LOG: WELL MW-5

Depths (in feet) from	to	
0	10	Silt, trace of very fine sand, some gravel, light grayish brown.
10	15	Clay, silty, moist, tan to light brown.
15	20	Silt, some fine gravel, trace of fine sand and clay, light brown.
20	25	Silt, trace of clay, light brown.
25	30	Gravel, very silty, light brown.
30	40	Gravel, some fine to medium sand, very silty, light to medium brown.
40	45	Silt, clayey, moist, medium to dark brown.
45	50	Gravel, silty and clayey, some fine to coarse sand, medium to dark brown.
50	55	Silt, some fine gravel, dark brown.
55	61	Gravel, silty, some fine to medium sand, dark brown.
61	67	Limestone and shaley limestone,very fine grained, soft, medium to dark gray.

REMARKS: Boring was drilled to total depth using reverse rotary methods. Dedicated 1/3 horsepower submersible pump installed.

WELL CONSTRUCTION DATA:

WELL MW-5

Location: Township & Range Coordinates: 1/4, 1/4, 1/4 of Sec. , T. S , R. W .
Mercur Coordinates: N. E.
Elevation: Ground; feet. Top of casing; feet.
Completion Date: 12/01/89
Drilling Co: Lang Exploratory Drilling
Drilling Method: Air reverse rotary
Drilling Fluid: Water
Boring: Diameter: 10 inch Depth:67.0 feet.
Casing: Diameter: 5.0 inch Material: Schedule 80 PVC
Depth: from ground to 46.5 feet.
Screen: Diameter: 5.0 inch Material: Schedule 80 PVC, 0.020 slot
Screen Depth: 46.5 to 66.5 feet below grade.
Sand Pack: Type: #20-40 graded Colorado Silica Sand
Depth: from 34.5 feet to total depth.
Bentonite Seal: Type: Bentonite pellets
Depth: 29.5 feet. to 34.5 feet.
Grout Seal: Type: Neat cement with 4% bentonite
Depth: from 0 to 29.5 feet.

ADDITIONAL DATA:

Static water level: Date: 12/07/89
Depth: 40.10 feet below top of casing
Elevation: . feet.
Chemistry: Date:12/07/89
pH 7.69, Sp. cond.1050 micromhos/cm.

GEOLOGIC LOG: WELL MW-7

Depths (in feet) from	to	
0	5	Clay, silty, light to medium brown. grayish brown.
5	10	Grades with some very fine gravel.
10	20	Clay, light to medium brown.
20	25	Silt, clayey, trace of coarse sand.
25	40	Gravel, comprised of very fine limestone, very silty, some clay, medium brown.
40	60	Grades with gravel comprised of shaley claystone and limestone dark brown.
60	67	Grades shaley, dark gray.
67	72	Shale, soft, dark gray to black.

REMARKS: Boring was drilled to total depth using reverse rotary methods. Dedicated 1/3 horsepower submersible pump installed.

WELL CONSTRUCTION DATA:

WELL MW-7

Location: Township & Range Coordinates: 1/4, 1/4, 1/4 of Sec. , T. S , R. W .
Mercur Coordinates: N. E.
Elevation: Ground; feet. Top of casing; feet.
Completion Date: 11/29/89
Drilling Co: Lang Exploratory Drilling
Drilling Method: Air reverse rotary
Drilling Fluid: Water
Boring: Diameter: 10 inch Depth:72.0 feet.
Casing: Diameter: 5.0 inch Material: Schedule 80 PVC
Depth: from ground to 47.8 feet.
Screen: Diameter: 5.0 inch Material: Schedule 80 PVC, 0.020 slot
Screen Depth: 47.8 to 67.8 feet below grade.
Sand Pack: Type: #20-40 graded Colorado Silica Sand
Depth: from 37.4 feet to total depth.
Bentonite Seal: Type: Bentonite pellets
Depth: 32.6 feet. to 37.4 feet.
Grout Seal: Type: Neat cement with 4% bentonite
Depth: from 0 to 32.6 feet.

ADDITIONAL DATA:

Static water level: Date: 12/08/89
Depth: 30.47 feet below top of casing
Elevation: . feet.
Chemistry: Date:12/08/89
pH 7.58, Sp. cond. 1600 micromhos/cm.

COMMENTS: Vertical and horizontal survey coordinates not yet available.

CHEMTECH

CHEMICAL AND BACTERIOLOGICAL ANALYSES

DATE: 12-28-89

TO: Dames & Moore
250 East 300 South
Salt Lake City, UT 84111

SAMPLE ID: Lab #U046666 - Barrick MW-5, 12-7-89

CERTIFICATE OF ANALYSIS

PARAMETER	DETECTED
Alkalinity as $CaCO_3$, mg/l	305
Aluminum as Al (T), mg/l	<.1
Aluminum as Al (D), mg/l	<.1
Ammonia as NH_3-N, mg/l	1.16
Arsenic as As (T), mg/l	0.24
Arsenic as As (D), mg/l	<.01
Barium as Ba (T), mg/l	0.065
Barium as Ba (D), mg/l	0.025
Bicarbonate as HCO_3, mg/l	372
Boron as B (T), mg/l	0.112
Cadmium as Cd (T), mg/l	<.01
Cadmium as Cd (D), mg/l	<.01
Calcium as Ca, mg/l	74.3
Carbonate as CO_3, mg/l	0
Chloride as Cl, mg/l	104
Chromium as Cr (Hex), mg/l	<.01
Chromium as Cr (T), mg/l	<.01
Chromium as Cr (D), mg/l	<.01
Conductivity, uhmos/cm	1,040
Copper as Cu (T), mg/l	<.01
Copper as Cu (D), mg/l	<.01

FOOTNOTES:

1) Exceeds State of Utah primary drinking water quality standards for dissolved concentrations, of 0.05 mg/l for lead.

(2) Exceeds State of Utah secondary drinking water quality standards for dissolved concentrations of 0.05 mg/l for manganese and 500 mg/l for total dissolved solids.

Rex Henderson

CHEMTECH
CHEMICAL AND BACTERIOLOGICAL ANALYSES

DATE: 12-28-89

TO: Dames & Moore
250 East 300 South
Salt Lake City, UT 84111

SAMPLE ID: Lab #U046666 - Barrick MW-5, 12-7-89

CERTIFICATE OF ANALYSIS

PARAMETER	DETECTED
Cyanide as CN (T), mg/l	<.002
WAD Cyanide as CN, mg/l	<.002
Cyanide as CN (Free), mg/l	<.002
Fluoride as F, mg/l	0.40
Gold as Au (T), mg/l	<.01
Gold as Au (D), mg/l	<.01
Hardness as $CaCO_3$, mg/l	361
Hardness (Non-Carb) as $CaCO_3$, mg/l	0
Hardness (T) as $CaCO_3$, mg/l	300
Hydroxide as OH, mg/l	0
Iron as Fe (T), mg/l	2.71
Iron as Fe (D), mg/l	0.027
Lead as Pb (T), mg/l	0.062
Lead as Pb (D), mg/l	0.062 (1)
Magnesium as Mg (T), mg/l	42.1
Magnesium as Mg (D), mg/l	27.4
Manganese as Mn (T), mg/l	0.095
Manganese as Mn (D), mg/l	0.052 (2)
Mercury as Hg (T), mg/l	<.0002
Mercury as Hg (D), mg/l	<.0002
Nickel as Ni (T), mg/l	<.01
Nickel as Ni (D), mg/l	<.01

Rex Henderson

CHEMTECH

CHEMICAL AND BACTERIOLOGICAL ANALYSES

DATE: 12-28-89

TO: Dames & Moore
250 East 300 South
Salt Lake City, UT 84111

SAMPLE ID: Lab #U046666 - Barrick MW-5, 12-7-89

CERTIFICATE OF ANALYSIS

PARAMETER	DETECTED
Nitrate as NO_3-N, mg/l	1.70
Phosphate as PO_4-P (T), mg/l	<.01
Potassium as K, mg/l	1.1
Selenium as Se (T), mg/l	0.0084
Selenium as Se (D), mg/l	<.002
Silica as SiO_2 (D), mg/l	22.8
Silver as Ag (T), mg/l	<.01
Silver as Ag (D), mg/l	<.01
Sodium as Na, mg/l	114
Sulfate as SO_4, mg/l	119
Suspended Solids, mg/l	314
Thallium as Tl (T), mg/l	<.01
Thallium as Tl (D), mg/l	<.01
Total Dissolved Solids, mg/l	635(2)
Turbidity, NTU	96
Zinc as Zn (T), mg/l	0.058
Zinc as Zn (D), mg/l	0.025
pH Units	7.84
Cations, meq/l	11.03
Anions, meq/l	11.55

Rex Henderson

CHEMTECH
CHEMICAL AND BACTERIOLOGICAL ANALYSES

DATE: 12-28-89

TO: Dames & Moore
250 East 300 South
Salt Lake City, UT 84111

SAMPLE ID: Lab #U046693 - Barrick MW-7, 12-8-89

CERTIFICATE OF ANALYSIS

PARAMETER	DETECTED
Alkalinity as $CaCO_3$, mg/l	248
Aluminum as Al (T), mg/l	<.1
Aluminum as Al (D), mg/l	<.1
Ammonia as NH_3-N, mg/l	4.65
Arsenic as As (T), mg/l	0.042
Arsenic as As (D), mg/l	<.01
Barium as Ba (T), mg/l	0.020
Barium as Ba (D), mg/l	0.020
Bicarbonate as HCO_3, mg/l	302
Boron as B (T), mg/l	0.087
Cadmium as Cd (T), mg/l	<.01
Cadmium as Cd (D), mg/l	<.01
Calcium as Ca, mg/l	89.9
Carbonate as CO_3, mg/l	0
Chloride as Cl, mg/l	274(2)
Chromium as Cr (Hex), mg/l	<.01
Chromium as Cr (T), mg/l	<.01
Chromium as Cr (D), mg/l	<.01
Conductivity, uhmos/cm	1,710
Copper as Cu (T), mg/l	<.01
Copper as Cu (D), mg/l	<.01

FOOTNOTES:
(1) Exceeds State of Utah primary drinking water quality standards for dissolved concentrations, of 0.05 mg/l for lead.
(2) Exceeds State of Utah secondary drinking water quality standards for dissolved concentrations of 250 mg/l for chloride, 250 mg/l for sulfate, and 500 mg/l for total dissolved solids.

Rex Henderson

CHEMTECH
CHEMICAL AND BACTERIOLOGICAL ANALYSES

DATE: 12-28-89

TO: Dames & Moore
250 East 300 South
Salt Lake City, UT 84111

SAMPLE ID: Lab #U046693 - Barrick MW-7, 12-8-89

CERTIFICATE OF ANALYSIS

PARAMETER	DETECTED
Cyanide as CN (T), mg/l	0.0032
WAD Cyanide as CN, mg/l	<.002
Cyanide as CN (Free), mg/l	<.002
Fluoride as F, mg/l	0.31
Gold as Au (T), mg/l	<.01
Gold as Au (D), mg/l	<.01
Hardness as $CaCO_3$, mg/l	645
Hardness (Non-Carb) as $CaCO_3$, mg/l	343
Hardness (T) as $CaCO_3$, mg/l	583
Hydroxide as OH, mg/l	0
Iron as Fe (T), mg/l	0.030
Iron as Fe (D), mg/l	0.030
Lead as Pb (T), mg/l	0.095
Lead as Pb (D), mg/l	0.095(1)
Magnesium as Mg (T), mg/l	107
Magnesium as Mg (D), mg/l	87.1
Manganese as Mn (T), mg/l	0.030
Manganese as Mn (D), mg/l	0.030
Mercury as Hg (T), mg/l	<.0002
Mercury as Hg (D), mg/l	<.0002
Nickel as Ni (T), mg/l	<.01
Nickel as Ni (D), mg/l	<.01

Rex Henderson

CHEMTECH

CHEMICAL AND BACTERIOLOGICAL ANALYSES

DATE: 12-28-89

TO: Dames & Moore
250 East 300 South
Salt Lake City, UT 84111

SAMPLE ID: Lab #U046693 - Barrick MW-7, 12-8-89

CERTIFICATE OF ANALYSIS

PARAMETER	DETECTED
Nitrate as NO_3-N, mg/l	0.195
Phosphate as PO_4-P (T), mg/l	<.01
Potassium as K, mg/l	1.1
Selenium as Se (T), mg/l	0.0024
Selenium as Se (D), mg/l	<.002
Silica as SiO_2 (D), mg/l	31.6
Silver as Ag (T), mg/l	<.01
Silver as Ag (D), mg/l	<.01
Sodium as Na, mg/l	140
Sulfate as SO_4, mg/l	309(2)
Suspended Solids, mg/l	4.0
Thallium as Tl (T), mg/l	<.01
Thallium as Tl (D), mg/l	<.01
Total Dissolved Solids, mg/l	1,130(2)
Turbidity, NTU	0.53
Zinc as Zn (T), mg/l	0.028
Zinc as Zn (D), mg/l	0.022
pH Units	7.41
Cations, meq/l	19.75
Anions, meq/l	19.14

Rex Henderson

ATTACHMENT #3

LANG DRILLING

PROPOSED ABANDONMENT PROCEDURES BOREHOLE MW-3

1. Probe inside of the 5-1/2-inch drill rod to determine that the inner diameter is clear to the top of the collars. If needed, run cleanout tools to the top of collars.

2. Shoot 5-1/2-inch drill rod off at the top of the collars (approximate depth of 76 feet).

3. Attempt to grout through the existing 5-1/2-inch drill rods in batches of 100 bags. This procedure may require 4 to 5 separate runs to seal the lost circulation zone prior to sealing the remainder of the hole with grout.

4. If grout will not hold the lost circulation zone, it may be necessary to pull the 5-1/2-inch drill rod from the hole and reenter with 6-inch flush pipe. This pipe would be run to T.D. and concrete would be pumped into the lost circulation zone. Concrete would be mixed with large gravel, delivered by truck from Tooele.

5. Upon successful abandonment, the casing would be cut off at or below ground surface and the location cleared of all equipment and debris.